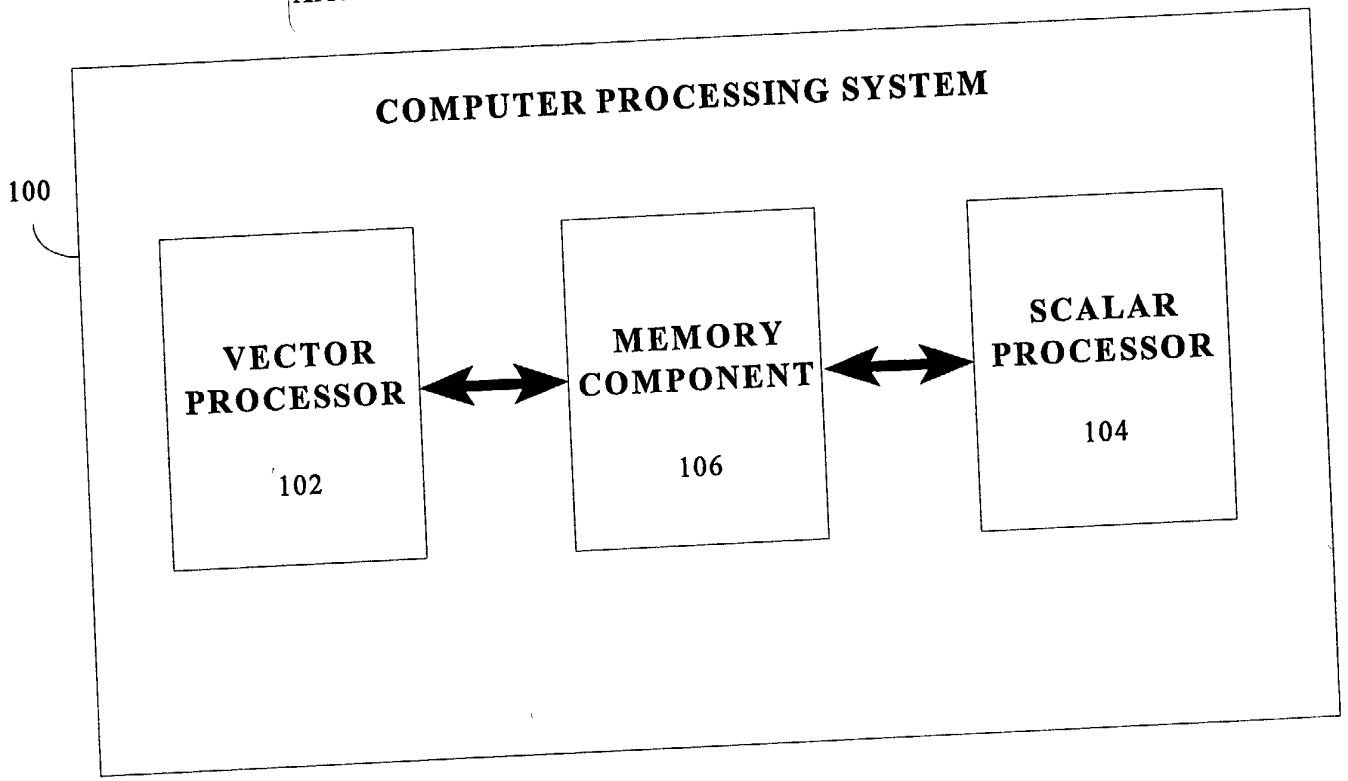
COMPUTER PROCESSING SYSTEM
100
VECTOR PROCESSOR
102
MEMORY COMPONENT
106
SCALAR PROCESSOR
104

FIGURE 1

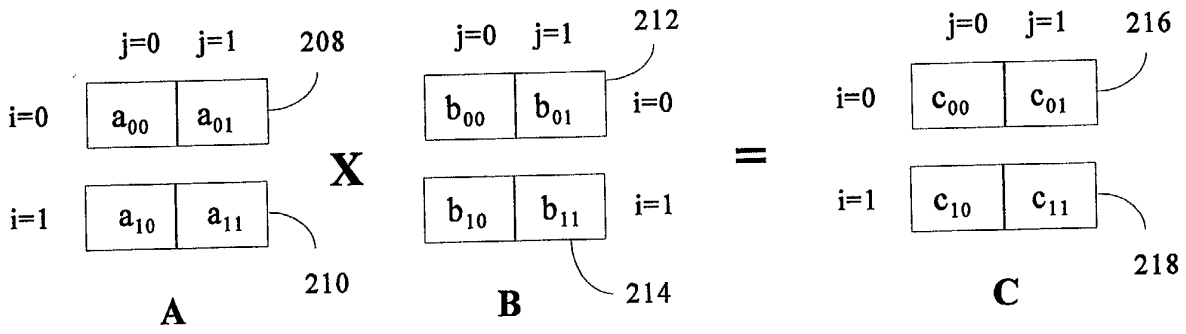

FIGURE 2

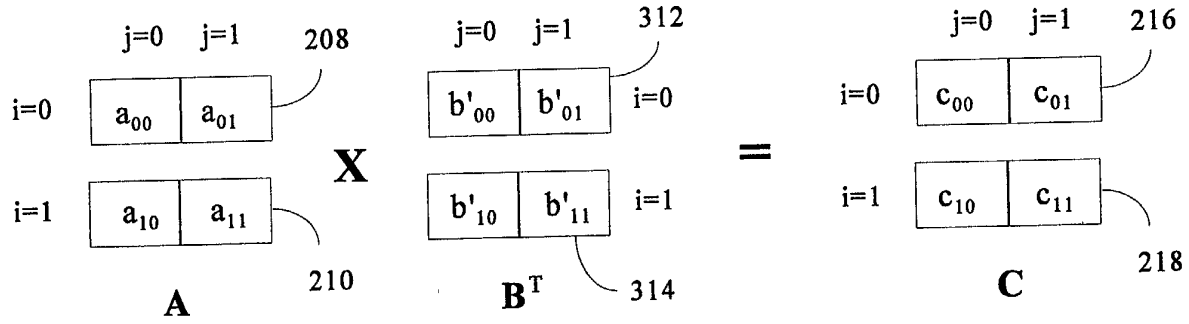

FIGURE 3

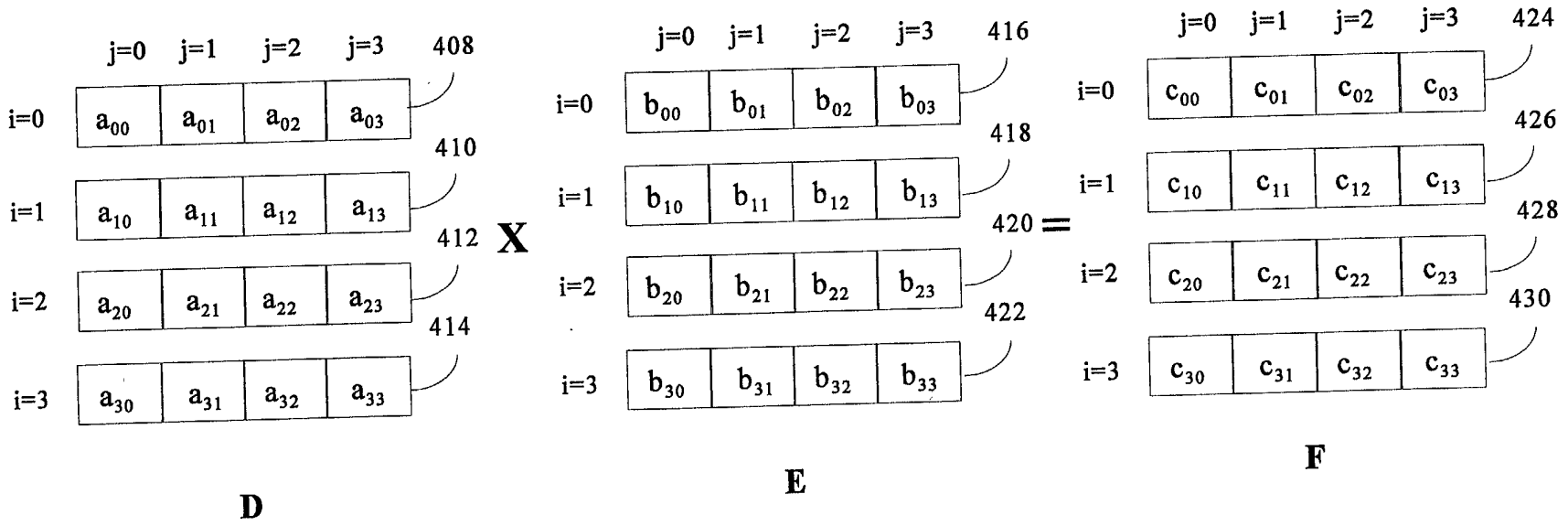
j=0 j=1 j=2 j=3
408
i=0 a00 a01 a02 a03
410
i=1 a10 a11 a12 a13
412
i=2 a20 a21 a22 a23
414
i=3 a30 a31 a32 a33
D
X
j=0 j=1 j=2 j=3
416
i=0 b00 b01 b02 b03
418
i=1 b10 b11 b12 b13
420
i=2 b20 b21 b22 b23
422
i=3 b30 b31 b32 b33
E
=
j=0 j=1 j=2 j=3
424
i=0 c00 c01 c02 c03
426
i=1 c10 c11 c12 c13
428
i=2 c20 c21 c22 c23
430
i=3 c30 c31 c32 c33
F

FIGURE 4

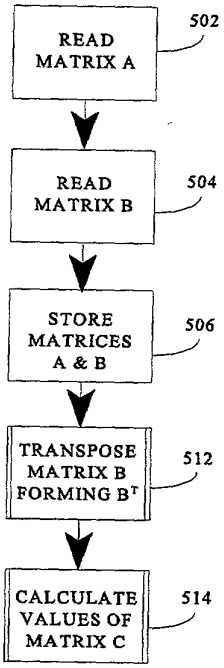

FIGURE 5

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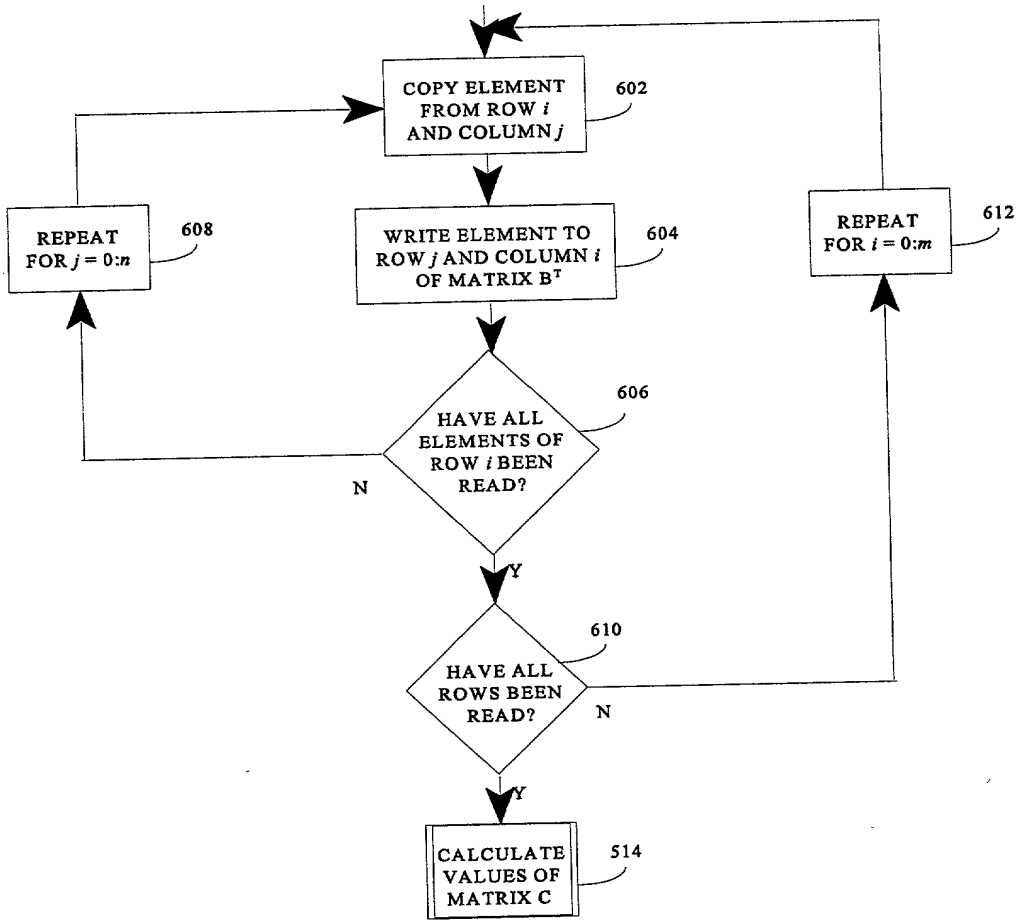
COPY ELEMENT FROM ROW i AND COLUMN j
602
WRITE ELEMENT TO ROW j AND COLUMN i OF MATRIX B^T
604
HAVE ALL ELEMENTS OF ROW i BEEN READ?
606
N
Y
REPEAT FOR j = 0:n
608
HAVE ALL ROWS BEEN READ?
610
N
Y
REPEAT FOR i = 0:m
612
CALCULATE VALUES OF MATRIX C
514

FIGURE 6

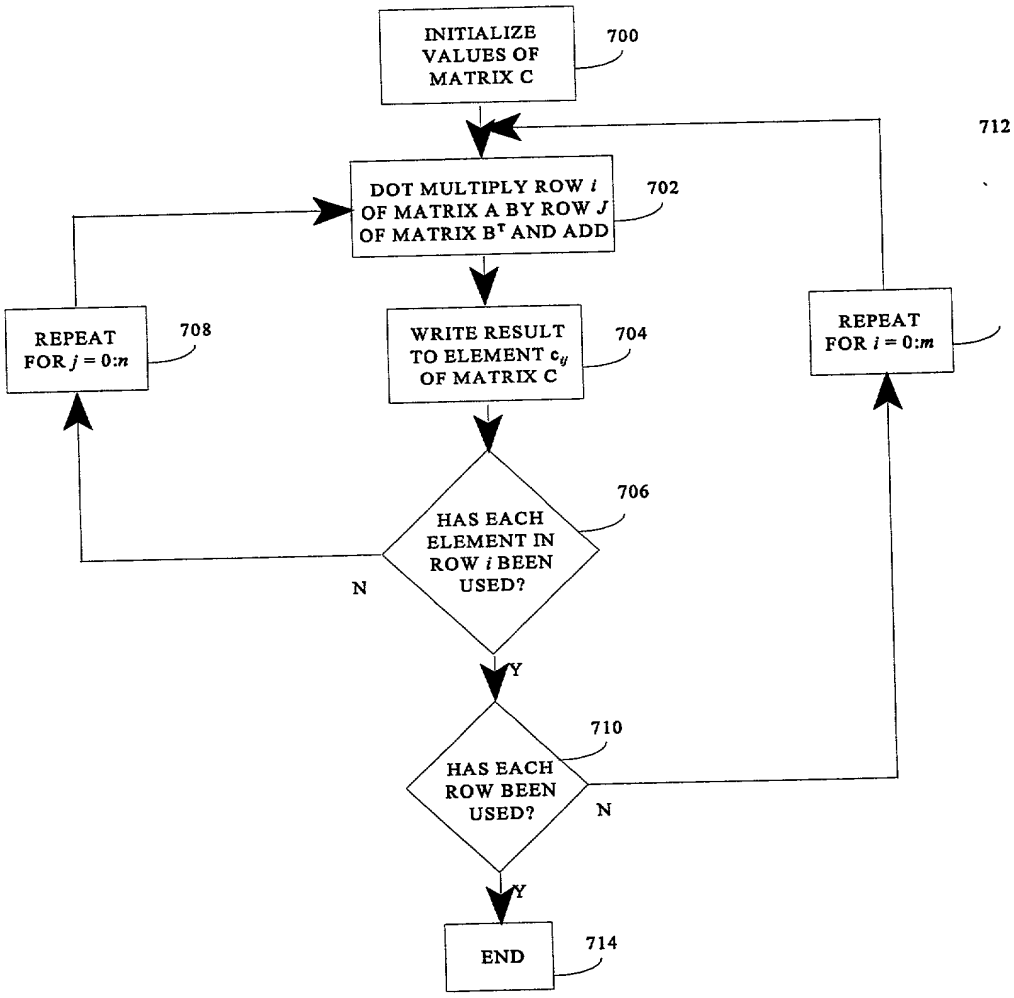
INITIALIZE VALUES OF MATRIX C
700
712
DOT MULTIPLY ROW i OF MATRIX A BY ROW J OF MATRIX B^T AND ADD
702
REPEAT FOR j = 0:n
708
WRITE RESULT TO ELEMENT c_ij OF MATRIX C
704
REPEAT FOR i = 0:m
HAS EACH ELEMENT IN ROW i BEEN USED?
706
N
Y
HAS EACH ROW BEEN USED?
710
N
Y
END
714

FIGURE 7

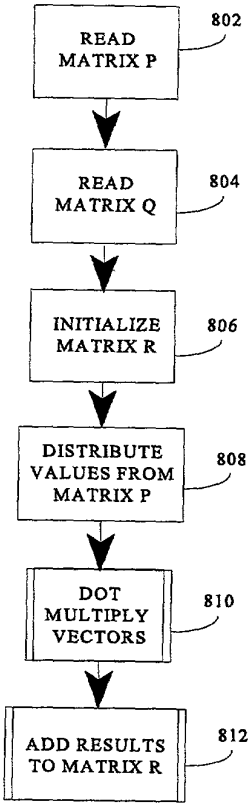
READ MATRIX P
802
READ MATRIX Q
804
INITIALIZE MATRIX R
806
DISTRIBUTE VALUES FROM MATRIX P
808
DOT MULTIPLY VECTORS
810
ADD RESULTS TO MATRIX R
812

FIGURE 8A

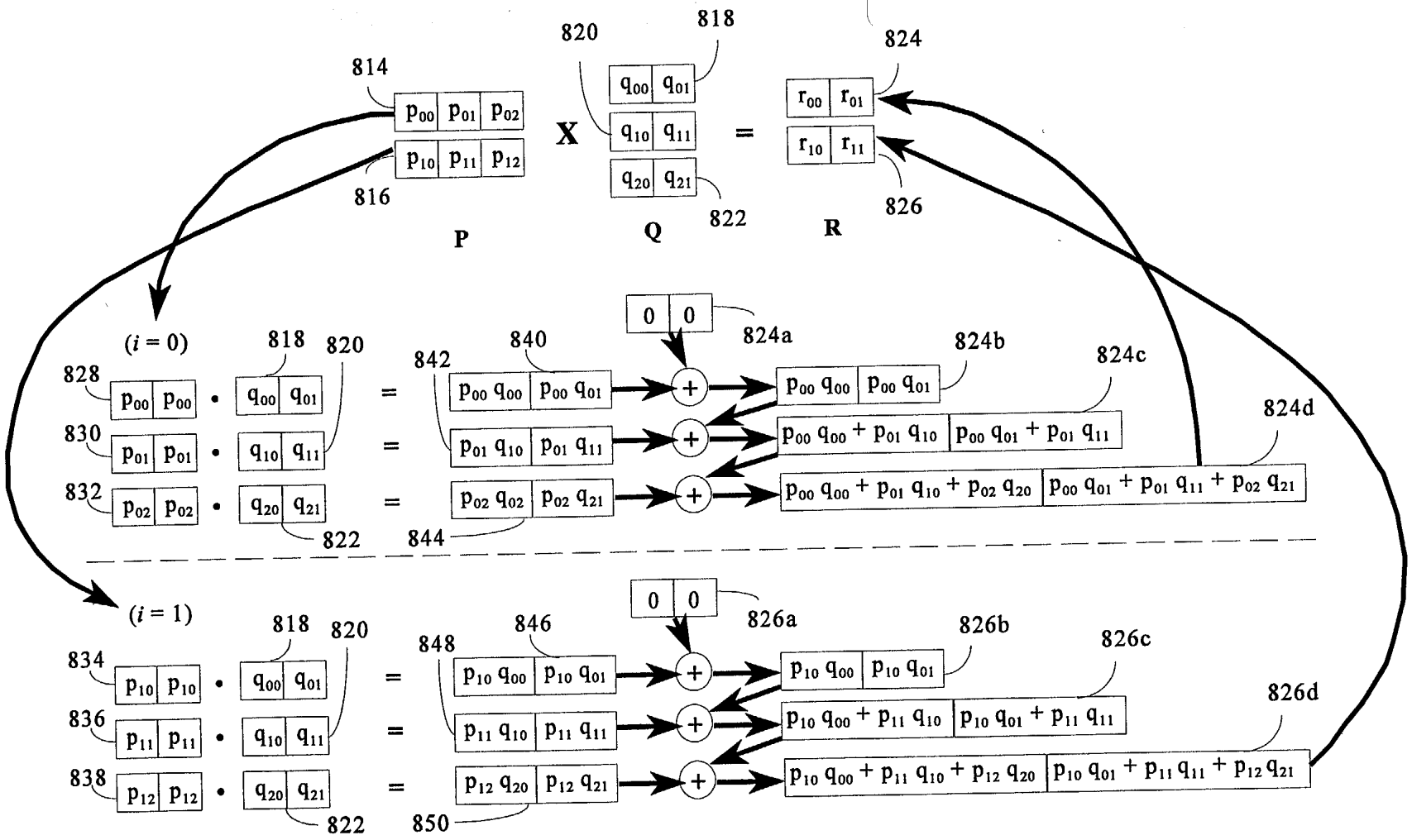
814
816
818
820
822
824
826
P
Q
R
X
=
(i = 0)
828
830
832
840
842
844
824a
824b
824c
824d
(i = 1)
834
836
838
846
848
850
826a
826b
826c
826d

FIGURE 8B

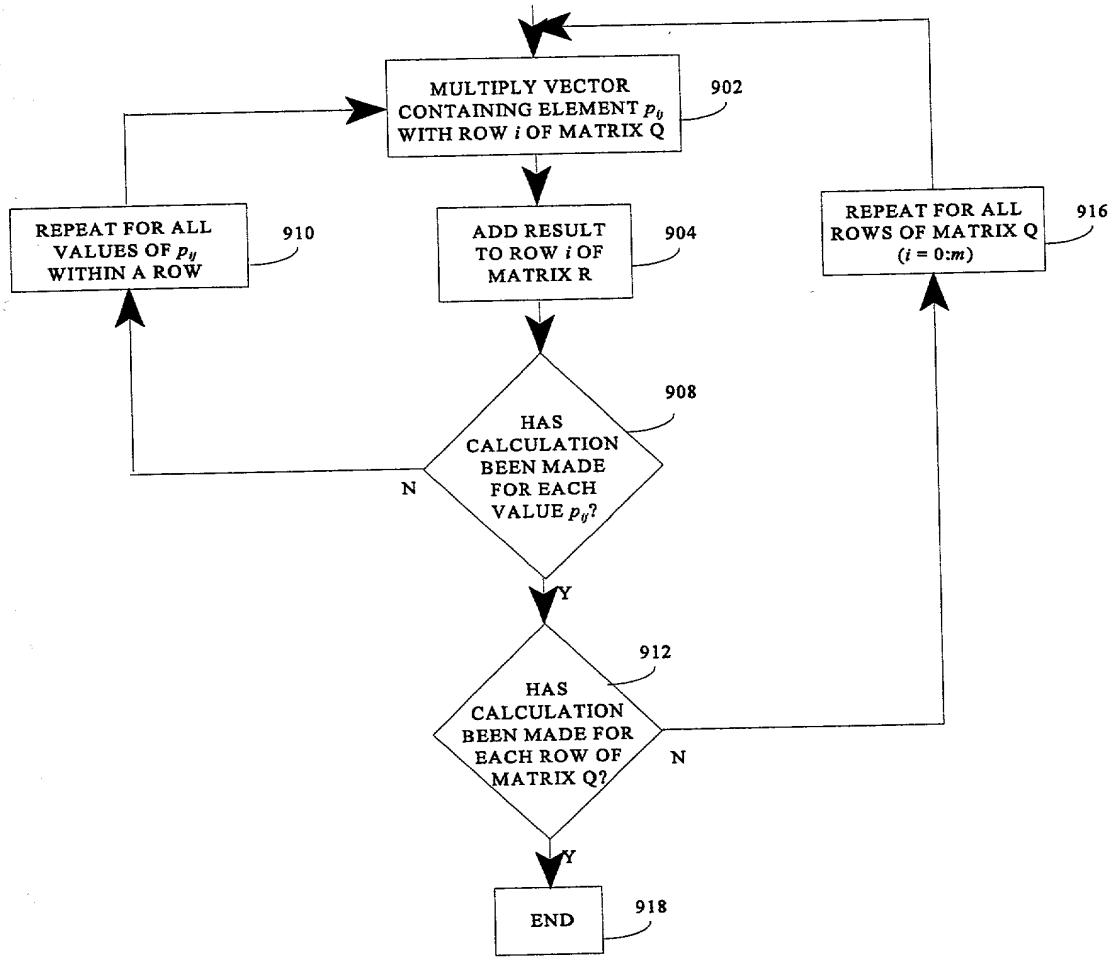
MULTIPLY VECTOR CONTAINING ELEMENT p_{ij} WITH ROW i OF MATRIX Q
902
ADD RESULT TO ROW i OF MATRIX R
904
HAS CALCULATION BEEN MADE FOR EACH VALUE p_{ij}?
908
N
Y
REPEAT FOR ALL VALUES OF p_{ij} WITHIN A ROW
910
HAS CALCULATION BEEN MADE FOR EACH ROW OF MATRIX Q?
912
N
Y
REPEAT FOR ALL ROWS OF MATRIX Q (i = 0:m)
916
END
918

FIGURE 9

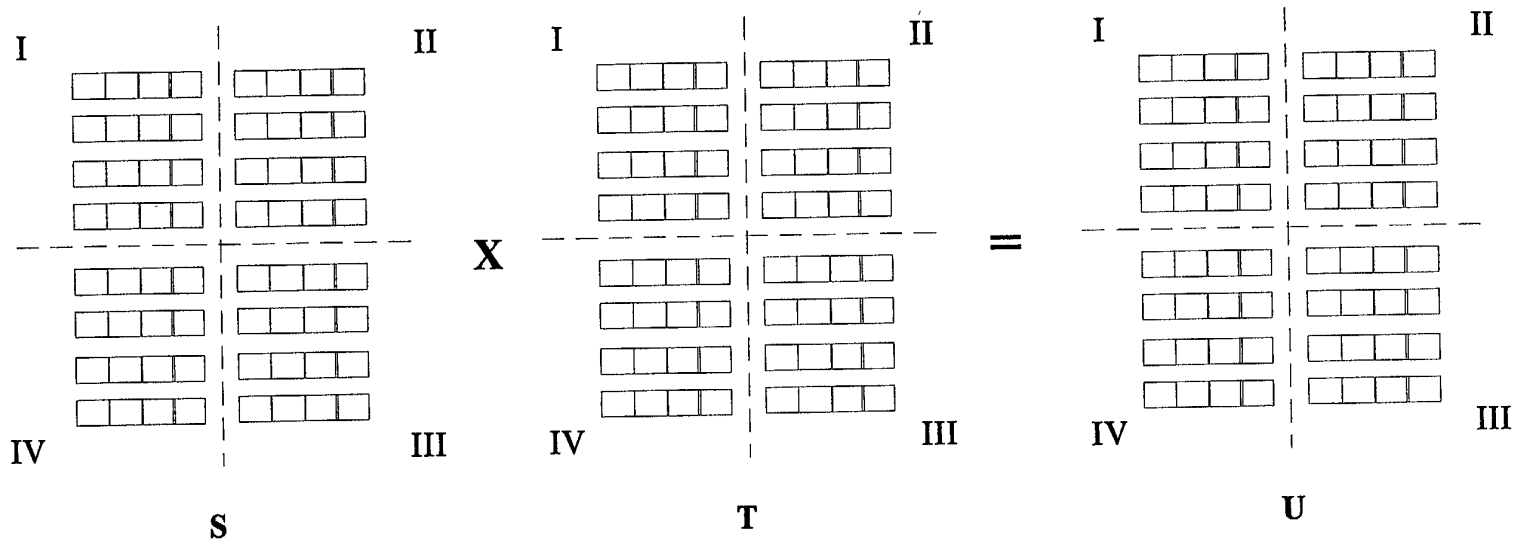

FIGURE 10

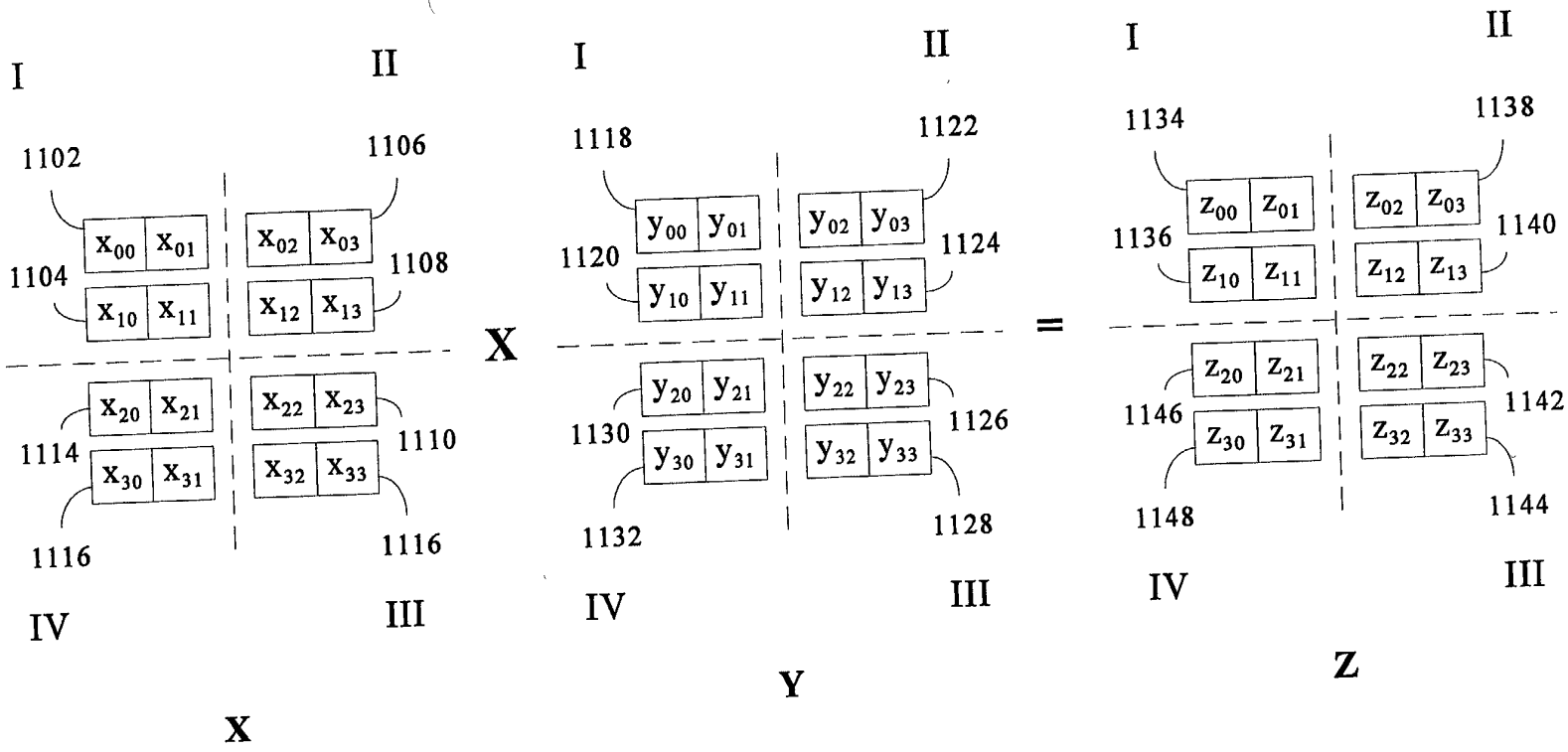
I
II
1102
1106
x_{00} x_{01}
x_{02} x_{03}
1104
1108
x_{10} x_{11}
x_{12} x_{13}
X
x_{20} x_{21}
x_{22} x_{23}
1114
1110
x_{30} x_{31}
x_{32} x_{33}
1116
1116
IV
III
X
I
II
1118
1122
y_{00} y_{01}
y_{02} y_{03}
1120
1124
y_{10} y_{11}
y_{12} y_{13}
y_{20} y_{21}
y_{22} y_{23}
1130
1126
y_{30} y_{31}
y_{32} y_{33}
1132
1128
IV
III
Y
=
I
II
1134
1138
z_{00} z_{01}
z_{02} z_{03}
1136
1140
z_{10} z_{11}
z_{12} z_{13}
z_{20} z_{21}
z_{22} z_{23}
1146
1142
z_{30} z_{31}
z_{32} z_{33}
1148
1144
IV
III
Z

FIGURE 11

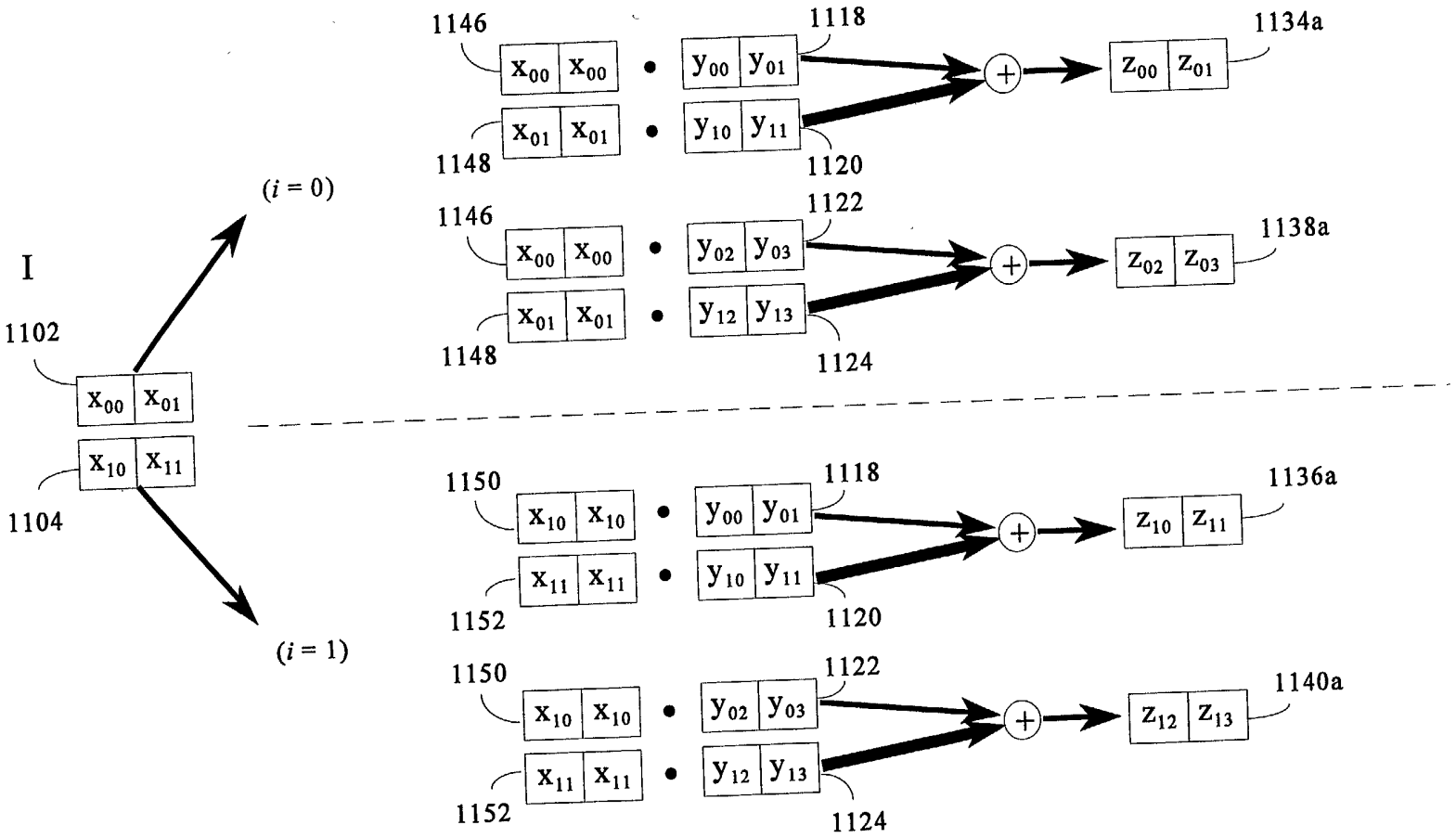
I
1102
1104
x_{00} x_{01}
x_{10} x_{11}
(i = 0)
(i = 1)
1146
1148
1118
1120
1122
1124
1150
1152
1134a
1136a
1138a
1140a
y_{00} y_{01}
y_{10} y_{11}
y_{02} y_{03}
y_{12} y_{13}
z_{00} z_{01}
z_{10} z_{11}
z_{02} z_{03}
z_{12} z_{13}

FIGURE 11A

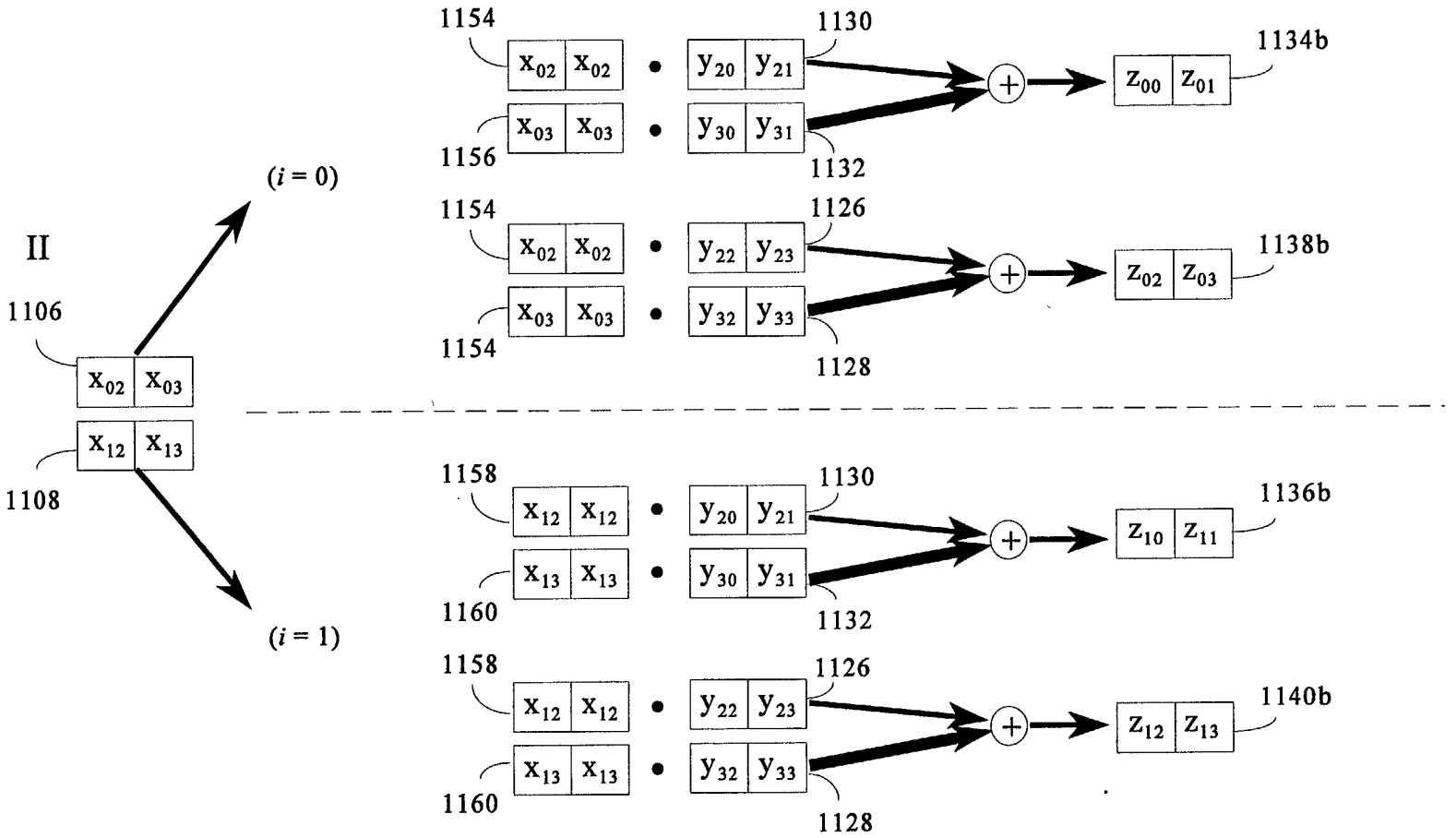
II
1106
x_{02} x_{03}
1108
x_{12} x_{13}
(i = 0)
(i = 1)
1154
1156
1158
1160
1130
1132
1126
1128
1134b
1136b
1138b
1140b
y_{20} y_{21}
y_{30} y_{31}
y_{22} y_{23}
y_{32} y_{33}
z_{00} z_{01}
z_{10} z_{11}
z_{02} z_{03}
z_{12} z_{13}

FIGURE 11B

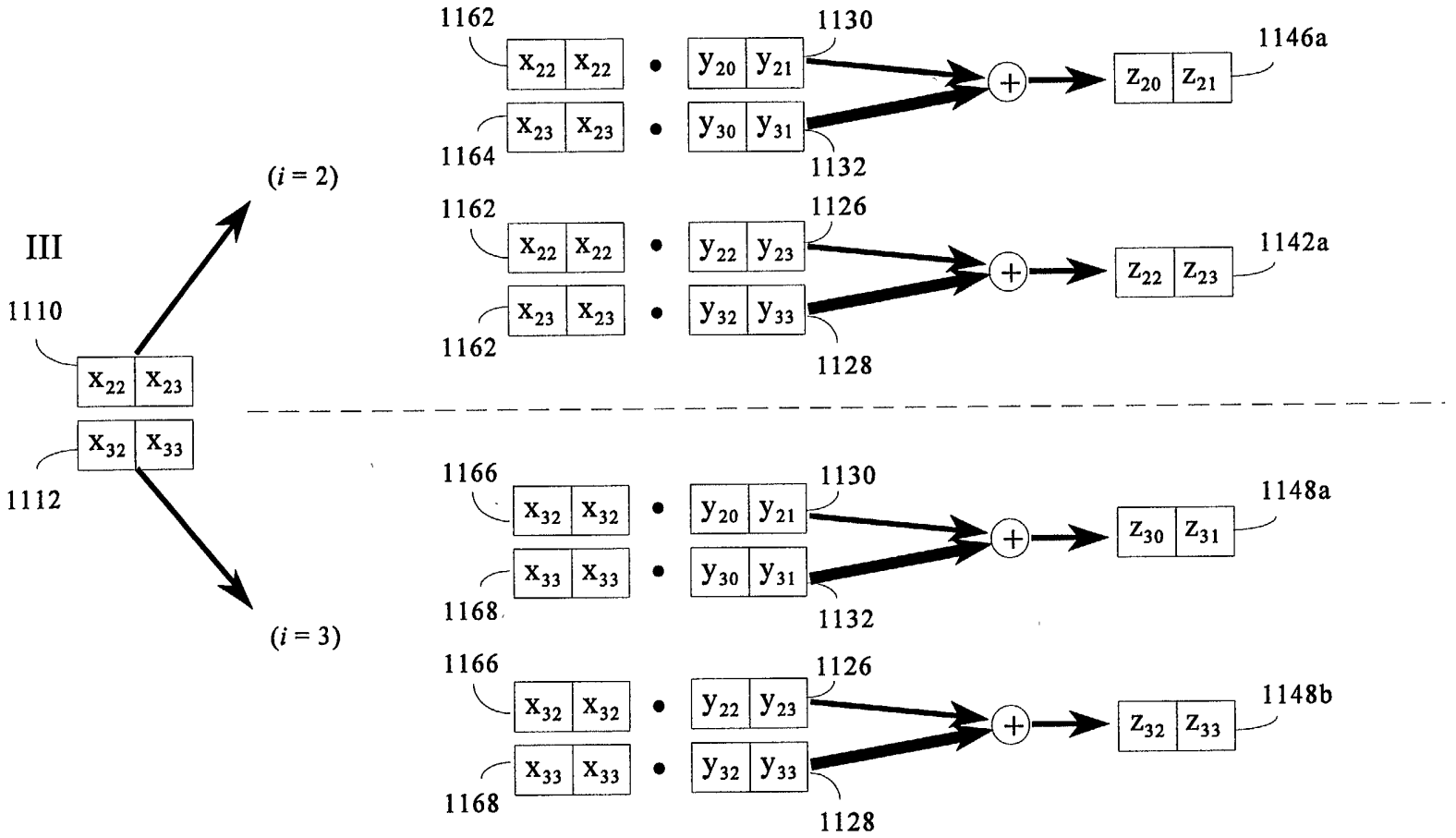
III
1110
x_{22} x_{23}
x_{32} x_{33}
1112
(i = 2)
(i = 3)
1162
1164
1166
1168
1130
1132
1126
1128
1146a
1142a
1148a
1148b
z_{20} z_{21}
z_{22} z_{23}
z_{30} z_{31}
z_{32} z_{33}

FIGURE 11C

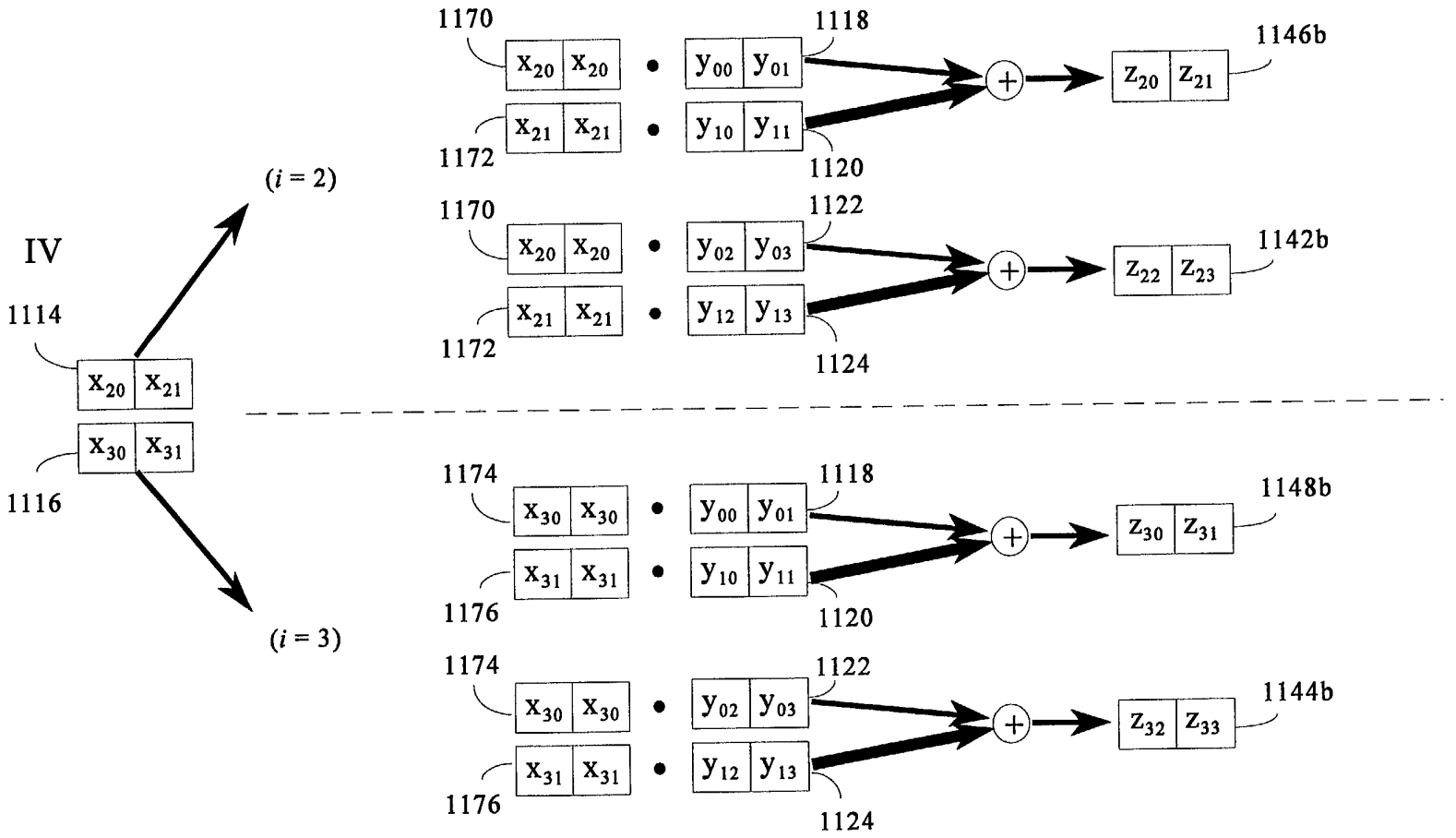
IV
1114
x_{20} x_{21}
x_{30} x_{31}
1116
$(i = 2)$
$(i = 3)$
1170
1172
1174
1176
1118
1120
1122
1124
1146b
1142b
1148b
1144b
y_{00} y_{01}
y_{10} y_{11}
y_{02} y_{03}
y_{12} y_{13}
z_{20} z_{21}
z_{22} z_{23}
z_{30} z_{31}
z_{32} z_{33}

FIGURE 11D